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ECB Tiering: A Success, But No Panacea

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The combination of the ECB's negative deposit rate and its sizeable liquidity injections (via its asset purchase programmes in particular) has been a significant source of support for the euro area's economy and lending. However, these policies have had a direct cost to banks, of about 6.5% of their profits in 2018, which could end up jeopardising their ability to finance the economy.

In order to preserve monetary policy transmission in a negative rate environment, the ECB decided to exempt some bank reserves from the negative deposit rate, beginning from October. Defying some fears, the introduction of tiered remuneration for reserves has not caused any lasting tensions on money markets. It has actually allowed for a reallocation of excess liquidity from the Monetary Union's core to its periphery.

Fresh off this success, and in an environment where excess liquidity is growing again with the resumption of quantitative easing, we believe that the ECB will not hesitate to increase the share of liquidity exempt from a negative rate. We estimate that the multiplier may be (gradually) increased from its current 6 to 10 or 11 without any tensions appearing on money markets. If more is needed, other options would need to be considered, but these would be more complex and bring lower gains for banks (adding more tiers, term deposits, certificates of deposit).

Preserving transmission of monetary policy

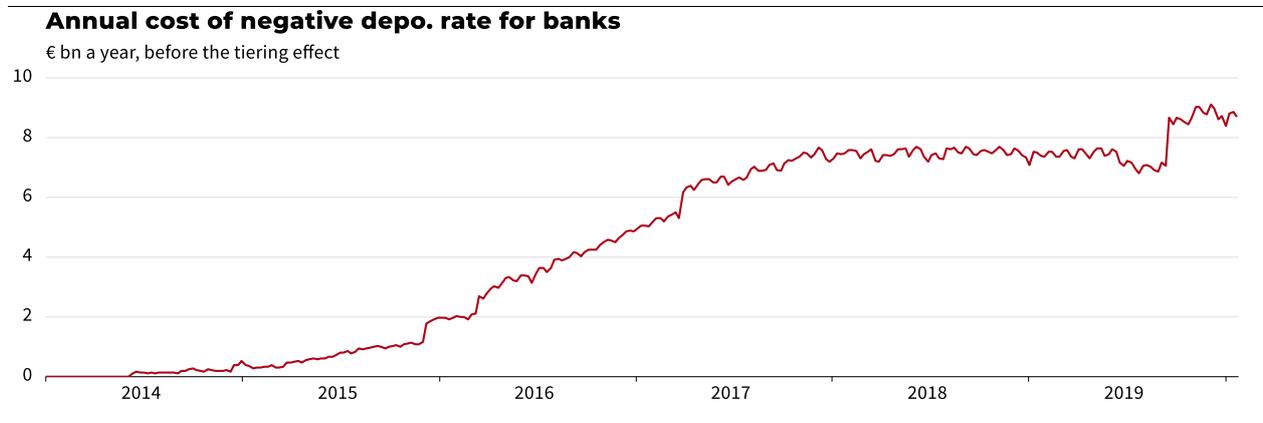
On 12 September, the ECB announced a new monetary stimulus package, introducing in parallel a tiering system for the remuneration of bank reserves.

Since 2014-2015, monetary policy in the euro area has featured a combination of an increasingly negative key policy rate and massive injections of liquidity in the banking sector. As passing negative interest rates onto their client's deposits is difficult for banks¹, this very expansionary has a direct cost for the banking sector:

¹ Although 80% of German banks are applying an average negative rate onto corporate current accounts and 22% are doing the same for personal current accounts (source: Bundesbank Monthly Bulletin, 11/2019).

in 2017-2018, it was nearing €7.5bn per year, about 6.5% of banks' profits in 2018 (€116bn).

In 2018, the annual cost of the negative deposit facility rate reached €7.5bn for euro area banks



Source : ECB, SG Economic and Sector Research

As evidence shows that declining banking profitability can harm loan origination, a tiered system aims at preserving the transmission of monetary policy to the economy by exempting some of the reserves that banks hold at the central bank from the negative interest rate.

Why not simply opt to increase the deposit facility rate? Because that would tighten financial conditions, a development that the ECB wants to avoid as growth and inflation projections are still low. The tiered rate system, by exempting only some of the reserves from the negative rate, has the benefit of preserving the signalling effect of monetary policy and anchoring of interbank rates to the deposit rate (the first euro above the exempt amount is still subject to the negative rate)².

Properly calibrating the system, on the other hand, is essential: where is the optimal point between moderating the cost of negative rates and preserving the signalling effect of the key policy rate? **In September, the ECB set a threshold of 6 times the banks' minimum reserve requirement amount.** Thus, since 30 October, reserves accounting for six times the amount of a bank's minimum reserve requirements (which already paid 0%) pay a 0% interest rate. The multiplier may be regularly adjusted if needed.

Since 30 October, the maximum excess liquidity amount exempted has been about €800bn³. About €1.1tn of excess liquidity is still subject to the -0.5% deposit facility rate (which makes the new system a two-tiered system).

² Since excess liquidity appeared in the system in 2008, we have observed that the gap between Eonia and the deposit facility rate has tended to increase when excess liquidity in the system is less than €350bn. However, this relationship may be unstable over time. Furthermore, the launch of €STR has certainly introduced a new relationship between short-term money-market rates and excess liquidity, as €STR is handled both by banking and non-banking agents.

³ Calculated based on the three-month average of the minimum reserve requirements in June 2019, i.e. €128.8 billion.

Based on our estimates, the measure will make it possible to minimise the cost of the negative deposit rate to banks by €2bn, all else being equal. This amount, however, is a maximum, because it assumes that liquidity is correctly distributed within the banking system, which is not the case (within a given nation, a large share of liquidity may be concentrated within a single bank, for instance). As a result, unless liquidity is correctly reallocated, the effective cost of interest rate negativity will remain over €5.5bn, or even unchanged from the previous situation due to the cut in the deposit rate⁴.

Successful implementation

Prior to the adoption of this new instrument, some members of the Governing Council had expressed concern about the potential side effects of a tiering system.

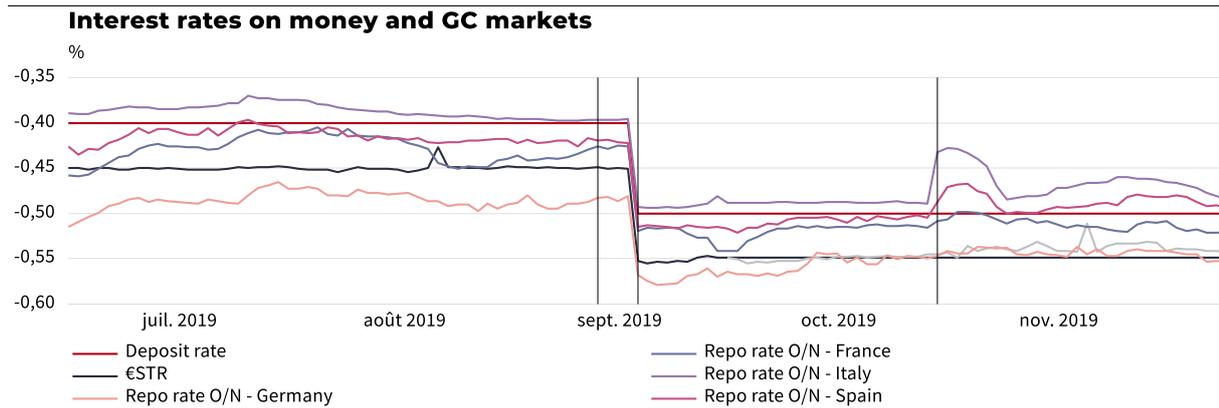
The unequal distribution of reserves within the euro area (five countries account for 80% of holdings) offered arbitrage opportunities to banks whose theoretical exempted reserves were greater than their actual amount. This was particularly true for amounts equivalent to several tens of billions of euros, in banking systems with few reserves: Italy, Portugal, and Greece.

The main worry was that introducing the tiered system would generate friction in short-term rates in those economies, with their banks seeking to substitute sovereign bonds (with a negative yield) with reserves (on which up to six times the minimum reserve requirement would earn interest at 0%). This stems from the persistence of financial fragmentation in the euro area: a mismatch between liquidity supply and demand in interbank markets could have caused an increase in short-term interest rates, particularly Italian ones.

However, this didn't turn out to be the case. Core-country banks redeployed some of their excess reserves to peripheral banks without any lasting tensions appearing in the rates of major money markets (collateralised and non-collateralised). In a matter of days, the banks carried out transactions to optimise their use of the tiering system.

⁴ Let's take a theoretical example based on France. The banking system holds €457bn of excess liquidity, with a minimum reserve requirement of €26bn. If excess liquidity is equally distributed among French banks, the exemption under the tiering system will be 26×6 , or €156bn. However, given that the multiplier of 6 applies to each bank individually, if excess liquidity is unequally distributed, the exemption might be substantially smaller. For instance, assume that one bank holds €400bn of excess liquidity while its minimum reserve requirements are €6bn. It will have an exemption of €36bn. The other banks will have a theoretical exemption of €120bn. However, as they only have €57bn of excess liquidity, the effective exemption will be €57bn. The French banking system would have a total exemption of €93bn, compared to €156bn in the first example.

Implementing the tiering system has not lastingly destabilised the operation of money markets



Source: Bloomberg, SG Economic and Sector Research

Note: The first vertical line marks the September meeting of the Governing Council (12/09/2019); the second the start of the sixth reserve maintenance period (18/09/2019) when the 10bp decrease in the deposit rate became effective; and the third the start of the seventh reserve maintenance period (30/10/2019), when the tiering system came into effect. Last observation: 10 December 2019.

The table below shows how excess reserves by country changed before and after the introduction of the mechanism. As expected, Italy, Portugal, and Greece saw the excess liquidity of their banking system increase, while it substantially declined in the Netherlands and Belgium. However, it has also counter-intuitively increased elsewhere, such as Germany (where it was predicted to decrease). For that reason, the observed fluctuations do not just cover the amount arbitrated by the banks. For instance, autonomous liquidity demand (particularly transactions by Treasuries) also influences changes in bank liquidity. However, after correcting for these effects [Coeuré \(2019\)](#) and [Baldo et Lungu \(2019\)](#) come to a conclusion close to our own: liquidity has been redeployed from the core of the Monetary Union to the periphery (including from Germany), particularly to Italy, without lasting tensions appearing in money markets.

Distribution of excess liquidity before and after the introduction of the tiering system for reserve remuneration

Excess reserves outstanding and Sep./Dec. change, by country, € bn			
Country	Sep. 2019	Nov. 2019	Change
DE	580	601	21
FR	440	446	6
IT	65	123	58.6
ES	91	87	-4
NL	181	143	-37
BE	79	57	-21
AT	33	44	11
FI	92	93	1
LU	108	114	6
IE	25	34	9
PT	9	14	5
EL	1	7	6

Source : ECB, SG Economic and Sector Research

An increase in the multiplier seems inevitable

With the ECB restarting net asset purchases (up to €20bn per month over an indeterminate period), banks' excess reserves will continue to increase⁵. Even with unchanged monetary policy, the cost of the negative interest policy to banks is therefore mechanically set to grow, unless the ECB adjusts the multiplier on minimum reserve requirements upwards in order to increase the portion of liquidity exempted.

We believe the Governing Council will ultimately make this decision, at least out of the desire to cap the cost to banks of its negative interest rate policy. It is very likely that such a decision would *de facto* accompany any new cut in the deposit facility rate.

With that said, two questions arise:

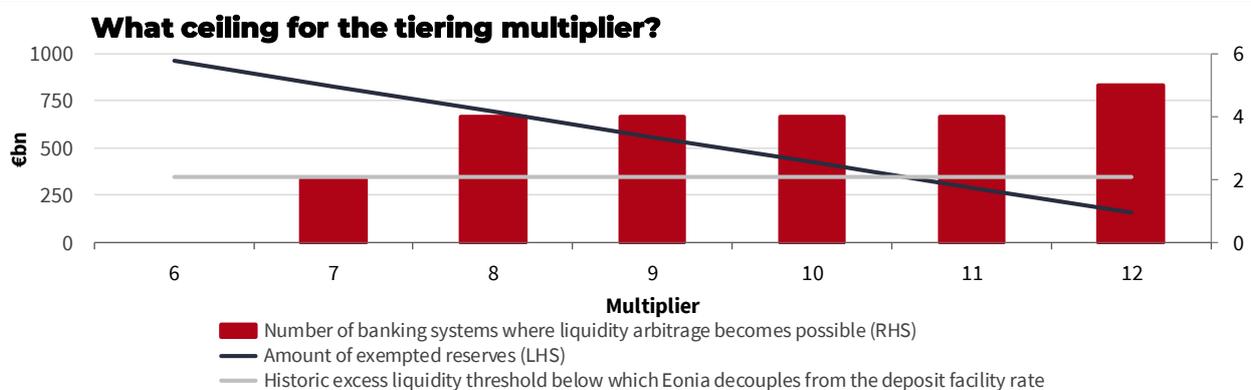
- **What is the maximum amount of liquidity that the ECB can exempt from negative rates without creating tensions on short-term rates (Eonia/€STR)?**
- **At what multiplier level could a mismatch appear between liquidity supply and demand in national money markets, particularly in Italy?**

⁵ Certainly at a slower pace than in 2015-16, as autonomous liquidity demand (Treasury, other non-bank agents with an account at the Eurosystem) has substantially increased since 2017.

Regarding the maximum exemptable amount, the observation of excess reserves since 2008 (when they first appeared in the banking system) suggests that the difference between the Eonia and the deposit facility rate tends to increase when excess reserves in the system are less than €350bn. As things currently stand, without taking into account future increases in excess reserves, **the ECB could at most increase the multiplier from 6 to 10** without that threshold being met. However, the high volatility of interest rates on the U.S. repo market in September 2019 serves as a reminder that **these amounts must be handled carefully. This is because the historic relationship between Eonia and excess reserves could be affected by multiple factors**, which could increase the liquidity threshold below which Eonia tends to decouple from the deposit facility rate. The large share of excess reserves held as HQLA (€780bn based on our estimates) could be one of these factors.

With respect to the second question, an increase in the multiplier could cause tensions on some national money markets even before the multiplier reaches that threshold of 10. Any increase automatically provides new arbitrage opportunities for banks in countries where excess reserves remain rare. As things currently stand, we estimate that the increase in the multiplier from 6 to 7 would free up reserves subject to arbitrage in two banking systems, then moving from 7 to 8 in four banking systems (Italy, Spain, Portugal, and Greece). The multiplier would have to be increased to 12 for a core euro area country, namely Austria, to be affected.

A macro approach suggests that the ECB could increase the tiering multiplier to 10 without lastingly disrupting the operation of money markets



Sources : ECB, SG Economic and Sector Research computations

Due to the unequal distribution of liquidity within each system, however, it is difficult to estimate how much additional demand would be brought about by raising the multiplier. To do so, a bank-by-bank approach is required. The case of Italy (which we have illustrated in the box below, because it is the largest market affected) suggests that the multiplier would potentially be limited to 11, a level close to the

one that results from the macro approach. The additional reserve levels subject to arbitrage with each increase of 1 to the multiplier are about €10bn in that country⁶.

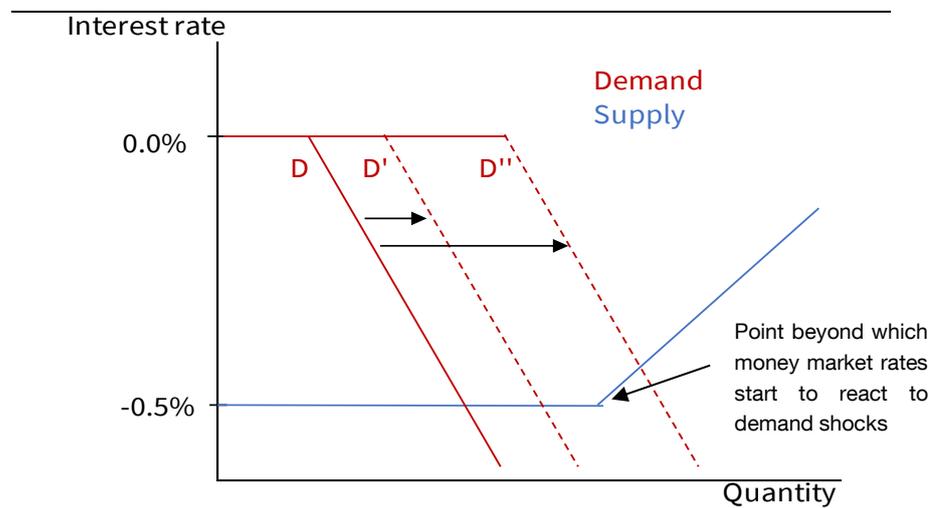
These conclusions suggest (i) that the ECB has room to increase the multiplier without causing tensions in short-term rates, both in the euro area and nationally and (ii) that a gradual approach is set to be preferred in order to avoid too large a demand shock on money markets.

Box: The Italian case suggests that the multiplier might be limited to 11

The ECB’s ability to raise the tiering multiplier without triggering an increase in money-market rates depends on the size of excess reserves in the euro area, as well as their distribution, both between countries and within those countries, due to the persistence of financial fragmentation. As such, although an aggregate analysis (based on euro area and national statistics) is beneficial, a bottom-up analysis based on individual banks may be a useful complement.

Hiking the multiplier is a positive demand shock to the money market: more banks can become borrowers on the market in order to maximise their 0% allowance at the ECB. The issue is therefore whether a demand shock would move demand from D to D’ or from D to D’’ in the diagram below. A bank-by-bank analysis makes it possible to spot such discontinuities in the reaction of liquidity demand to multiplier upticks.

Schematic diagram of positive demand shocks in the money market



Source: SG Economic and Sector Research

⁶ This phenomenon may also be observed in systems rich in excess reserves. The case of Germany would be interesting to analyse, as excess liquidity is probably unequally distributed between small and large banks.

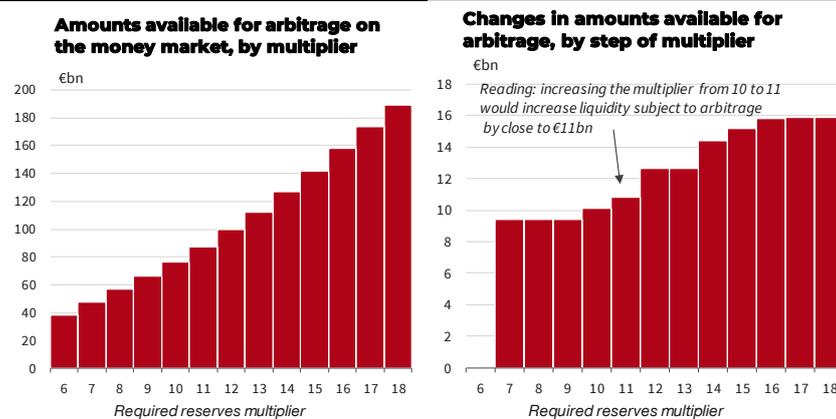
Italy is a key country in this view: In addition to their large size within the euro area, Italian banks have few excess reserves and some have already borrowed on the money market at negative rates to reinvest at 0% at the ECB with the current multiplier of 6, as previously noted.

A bank-by-bank analysis (based on the information available, see note at the end of this box) of excess liquidity in Italy suggests that, for the country’s 11 largest banking institutions, the latter represents 1.4 to 17.7 times their minimum reserve requirements. In detail:

- It appears that no new banks would become liquidity borrowers as long as the multiplier remains below 9.
- Additional liquidity demand from banks for arbitrage reasons would accelerate around a multiplier of 11.

That threshold of 11 times the minimum reserve requirements is therefore probably an upper limit, as things currently stand for liquidity, for the ECB if it seeks to avoid increasing the largest money-market rates for Italian banks (especially Italian GC repo rates).

Estimated change in Italian banks’ liquidity demand as a function of the tiering multiplier



Sources: Banks annual and quarterly reports, Banca d’Italia, SG Economic and Sector Research

Note: These estimates are based on annual reports (2018) or quarterly reports (Q2 or Q3 2019) depending on the bank. They are subject to various uncertainties and cautions: data from different time periods, at the end of the period (instead of per-period averages for ECB data used in the rest of this document), estimates of missing data, etc. Additionally, this exercise does not account for the likely future increase in excess liquidity by Italian banks resulting from the resumption of QE.

The multiplier is not the only adjustment variable

If a multiplier increase above 10/11 were to threaten the smooth functioning of money markets, the ECB would have several options. However, all of them would make the tiering mechanism more complicated, with a more limited reduction in the cost to banks of negative rates.

A first option would be to increase the number of tiers in the mechanism. This would make it possible to continue reducing the cost of negative interest rates to banks (to a lesser degree) whilst keeping liquidity demand on money markets from increasing too much.

A nearly identical option would be to use term deposits⁷. Over a 7-day maturity, for instance, the ECB could offer a fixed interest rate (located between the deposit facility rate and the refinancing rate) for a limited amount of reserves (e.g. based on a multiplier of minimum reserve). In return for lowering the cost of negative rates to banks, the ECB would control more of the very short end of the yield curve. Calibration of this instrument would therefore be critical to keep financial conditions from tightening.

Finally, the third option would be to replace term deposits with certificates of deposit, much like what the Riksbank and Nationalbanken do in Sweden and Denmark. The mechanism and effects would be the same, but with the advantage of providing banks with collateral that could be used for other transactions.

In conclusion, the tiering mechanism for reserve remuneration will become a standard instrument of monetary policy if the continued growth of liquidity in the banking system were to persist, as we expect it will. This is because as interest rate negativity becomes more of a burden to banks, the ECB will definitely have to adjust the instrument to preserve banks' ability to lend and the power to conduct monetary policy.

As a first step, our estimates suggest that the ECB will be able to gradually increase the exempted liquidity amount (with a multiplier of 10/11) without creating lasting tensions on money markets. However, going further would require making the mechanism more complicated, using options that are often similar to one another, with limited savings for banks. These range from adding more tiers to issuing certificates of deposit.

⁷ In 2010-2014, the ECB used this instrument to sterilise the liquidity injected through the Securities Market Programme. Offered to banks in exchange for reserves at seven days' maturity, these deposits were remunerated based on bank demand, at a rate between the deposit facility rate and the refinancing rate.

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